Redfish Harvesting Experiment — 1985

T. O'Leary and K. Clarke

Fisheries and Habitat Management
Newfoundland Region
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

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By

T. O'Leary and K. Clarke

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P.O. Box 5667
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ABSTRACT

O'Leary, T. and K. Clarke, March 1987. Redfish Harvesting Experiment - 1985. Can. Tech. Rep. Fish. Aquat. Sci. 1530: vi + 44 p.

During the summer of 1985 two inshore draggers were chartered to carry out a redfish harvesting experiment off the northeast coast of Newfoundland and in Fortune Bay. This report includes a description of the vessels and gear used, area surveyed, location of sets, results and conclusions. A financial assessment is also made on the project.

RÉSUMÉ

O'Leary, T. and K. Clarke, March 1987. Redfish Harvesting Experiment - 1985. Can. Tech. Rep. Fish. Aquat. Sci. 1530: vi + 44 p.

Au cours de l'été 1985, deux petits chalutiers côtiers ont été nolisés pour effectuer une pêche expérimentale du sébaste au large de la côte nord-est de Terre-Neuve et dans la baie de Fortune. Le présent rapport comprend une description des navires, des engins utilisés et de la pêcherie, les emplacements des traits, les résultats et les conclusions. Il présente aussi une évaluation financière de l'expérience.

PREFACE

This project was a follow-up of an experimental redfish project carried out in March, 1985. Project Report FDB-1984/84-34 outlines the results.

Two contracts were awarded to carry out this project; one to Andrew Daley, DFO/DSS Contract: OSC85-00303; the second to Cecil Rideout, DFO/DSS Contract OSC85-00304.

Scientific Authority for both contracts was:

Gerald Brothers
Technology Transfer and Development
Fisheries and Habitat Management
Newfoundland Region
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

INTRODUCTION

The expansion and diversification of the commercially harvestable fisheries resource base is a long-term objective of the Fisheries Development Branch of the Department of Fisheries and Oceans. Accordingly, the Technology Development and Transfer Unit undertakes projects to explore the commercial potential of harvesting underutilized species and stocks of fish.

During July and August, 1985, a Redfish Harvesting Project was conducted in NAFO Divisions 3K and 3Ps, off the northeast coast and the south coast (Burin Peninsula) of Newfoundland. The object of this project was to determine the capability of inshore draggers to land redfish which met the specifications of the Japanese market, and to determine the potential to develop a viable fishery using these vessels.

This project complemented the Experimental Redfish Project (Project Report FDB-1984/85-34) conducted during February and March 1985. The results of that project indicated a potential for a commercial fishery and suggested the need for further investigation.

The Redfish Harvesting Project was designed to resemble as closely as possible a commercial fishing venture. This technique was used because of the insight which can be gained into the problems which would be faced by commercial fishermen, and to obtain some estimates of costs and revenues for such a fishery.

MATERIALS AND METHODS

VESSELS AND EQUIPMENT

Two vessels were chartered to undertake the Redfish Harvesting Project, the **M.V. Sea Sons II** and the **M.V. Lady Day.** They were chartered for 30 sea days each with a charter day consisting of at least six consecutive hours at sea. The specifications of the chartered vessels and equipment, as well as other general information, are shown in Table 1. The specifications of gear used by these vessels are shown in Table 2.

TABLE 1. VESSEL SPECIFICATIONS

Particulars	M.V. Sea Sons II	M.V. Lady Day
L.O.A.	60'	55'
Beam	23'	18'
Vessel Type	Inshore Dragger	Inshore Dragger
Builder	Trinity Ship Builders	Clarenville Shipyard
Year Built	1984	1977
Skipper	Cecil Rideout	Gary Daley
Crew (Inc.Skipper)	5	4
Engine	625 Cummins	402 Caterpillar
Fuel Consumption* (per hour)		
- Steaming (Full Speed)	25 - 30 Gals.	18 - 22 Gals
- Towing	11 Gals	9 Gals
Maximum Speed*		
- Steaming	10 Knots	10 Knots
- Towing	3	3
Electronic Equip.		
- Radars	2JRC	2JRC
- Sounders	Color-Simrad	Simard
- Sonar	Simrad	-
- Radio	VHF + Side Band	VHF + Side Band

*Estimated

TABLE 2. GEAR SPECIFICATIONS

Particulars	M.V. Sea Sons II	M.V. Lady Day
1. Trawl Type	300 high lift	300 high lift
- Head rope	33.5m (100')	33.5m (110')
- Foot rope	39.6m (130')	39.6m (130')
- Bridles	27.4m (90')	27.4m (90')
- Ground warp	27.4m (90')	27.4m (90')
- Main warp	762-914m (2500-3000')	762-914m (2500-3000')
- Cod end	3.66+3.66m (12'+12') extension	3.66+3.66m (12'+12') extension
- Mesh size	130mm (regulation plastic)	130mm (regulation plastic)
- Floats	57, 20.3cm (8") dia.	57, 20.3cm (8") dia.
- Rollers	30.5cm (12") rubber	30.5cm (12") rubber
- Vertical opening	5.18m (17')	5.18m (17')
- Horizontal opening	25.9m (85')	25.9m (85')
2. Trawl Door Type	Wooden Rectangular	Wooden Rectangular
- Length	2.59m (8'6")	2.29m (7'6")
- Weight	635kg (1400 lbs.)	590kg (1300 lbs.)

OPERATIONAL PROCEDURE

Fishing for redfish, as carried out by the inshore draggers which participated in this Project, consisted of three distinct operations: searching, fishing and onboard handling.

Searching

The vessels steamed to areas which had suitable water depths and where redfish had been found previously (Pers. Comm. Offshore Trawler Capt.). The sounder was watched closely for concentrations of fish.

Since this was not a developed fishery the search operation consumed a relatively large portion of sea time because the fishermen did not have a historical base to guide their efforts.

Fishing

The fishing operation involved three tasks; setting, towing and hauling the otter trawl. The trawl was set (see Fig. 1) by releasing it from the net drum into the water; increase in vessel speed caused the trawl to shoot away from the stern of the vessel. When the net was completely in the water and the ground warps were fully extended, the bridles and ground warp was transferred from the net drum to the door legs via a pennant wire. The doors were then released into the water using the main winch. The amount of main warp (wire connecting drawl doors to the vessel) released depended primarily on the depth of water; the type of bottom was also taken into account. Normally, the warp length used was approximately three times the water depth in the area being fished. The time necessary for setting the trawl was 15 to 30 minutes.

Towing began with the braking of the main winch. A towing speed of approximately three knots was used. Towing time varied, depending on such factors as bottom condition, density of fish, hooking of gear on bottom, and tide and wind.

Hauling began with releasing the brake and activating main winch. The warps were winched onboard and the doors were secured to the gallows onto each side of the vessel. The ground warps were then transferred to the net drum which was activated and the ground warps, bridles and trawl were rolled onto it. As the codend, the outer end of the trawl, which contained fish that had been caught came alongside, it was hoisted over the stern by the main boom and lowered to a height of approximately .5m (1½') off the deck. The codend was untied and the catch released onto the deck (Fig. 2). If the total catch could not be hoisted aboard in a single lift, the

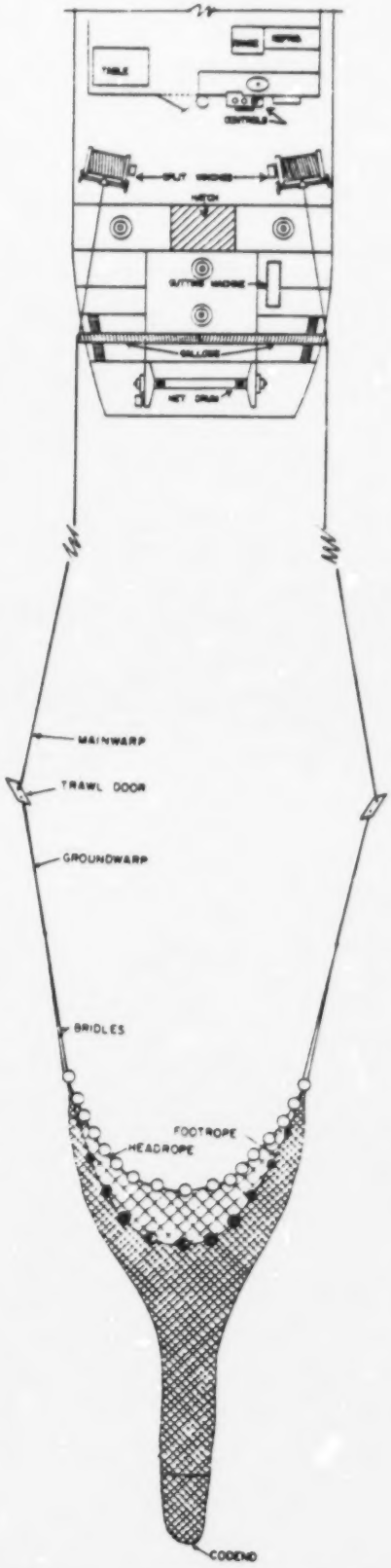

FIG. 1. DECK LAYOUT OF VESSEL AND TRAWL IN TOWING POSITION

codend was retied and the procedure repeated as often as required. The time required hauling is normally about 30 minutes.

Fig. 2. Redfish on the Deck of the M/V Sea Sons II.

Onboard Handling

The onboard handling of the catch was relatively simple since the fish were stored round below deck. For the purpose of this project fish were stometimes placed in 41kg (90 lb.) boxes but usually they were stored in bulk pens. The fish were iced at a fish to ice ratio of approximately 3:1 to help maintain good quality.

Each fishing trip was of 1 to 3 days duration. At dockside the boxes of fish were hoisted off individually and the bulk holding pens were emptied using net bags. Large insulated containers were used to transport the fish to the processing plant.

RESULTS

AREA OF OPERATION

The original project plan was to concentrate fishing in NAFO Division 3K, specifically the waters from Cape Freels north to Fogo extending up to 65 nautical miles offshore. Difficulties were experienced fishing in this area however, due to the presence of fixed gear, rough bottom, deep water and a general lack of redfish. Consequently, the fishing area was extended offshore to a limit of approximately 120 nautical miles and north to St. Anthony on the Great Northern Peninsula (Fig. 3).

There were further difficulties within the extended area; the longer period required for steaming reduced actual fishing effort, and adverse weather and sea conditions were experienced. It was also difficult to locate concentrations of redfish, and the fish that were caught were generally very small. After 19 charter days it was decided that further fishing effort in Division 3K was not warranted.

The vessels were instructed to steam to the Burin Peninsula on the south coast and to spend the remaining charter days fishin in NAFO Division 3Ps. Here the fishing was concentrated in Fortune and Hermitage Bays in an area approximately 10 nautical miles north of Miquelon Head (Fig. 3).

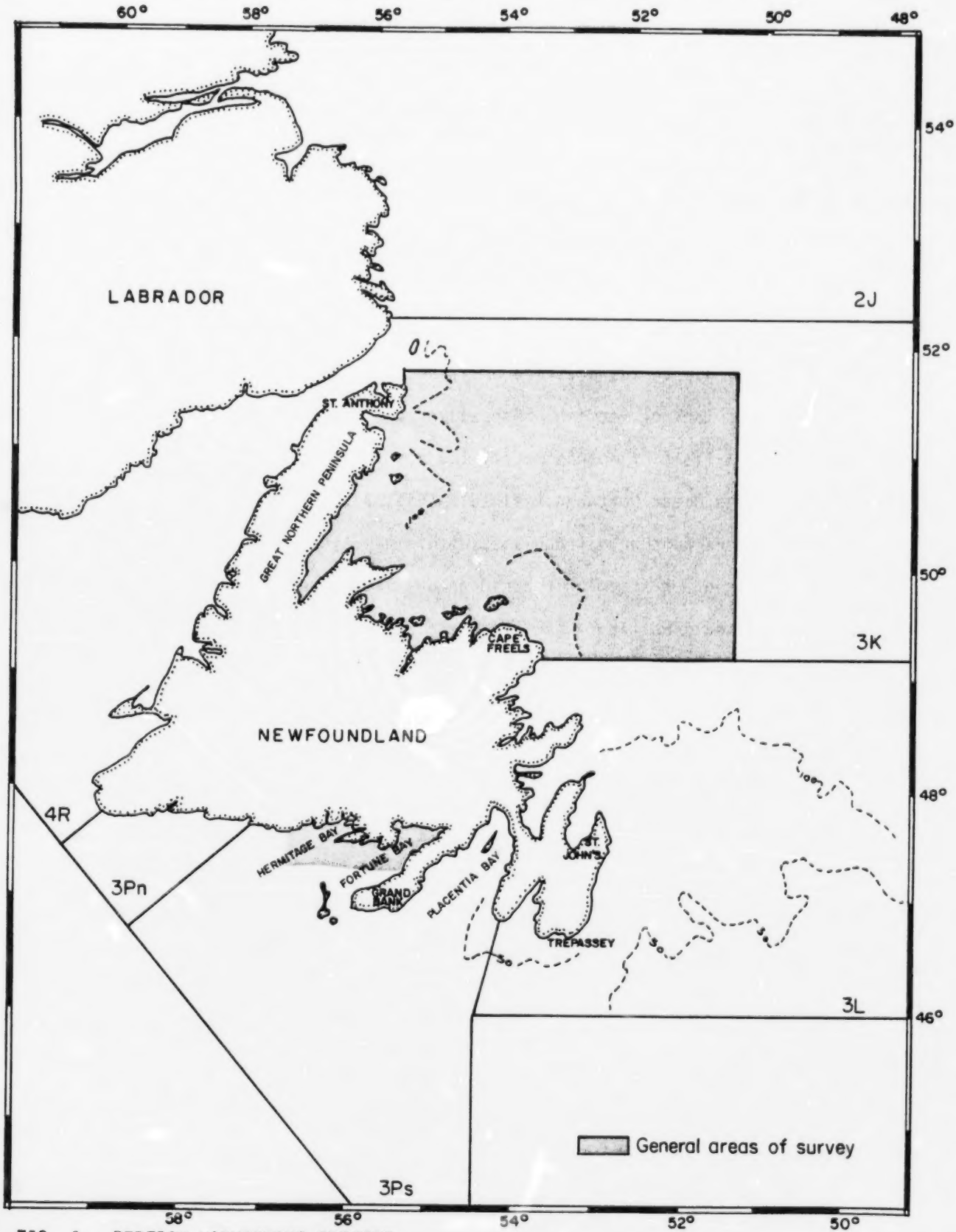

FIG. 3. REDFISH HARVESTING PROJECT

COST OF OPERATION

The contract of the **Sea Sons II** and the **Lady Day** provided a per diem rate of pay for each vessel per charter day and for refund of the cost of fuel. The vessel owners were responsible for all provisions and supplies as well as the maintenance and repairs to the vessels and fishing gear. The operating cost for the **Sea Sons II** was in Division 3K was $7,146.30 and in 3Ps $8,713.40 for a total of $15,859.70. The **Lady Day** had total operating costs of $11,541.10, $6,460.10 in 3K and $5,081.00 in 3Ps. For a further breakdown of costs, see Table 3.

TABLE 3. OPERATING COSTS REPORTED BY VESSEL OWNERS

	SEA SONS II			LADY DAY		
	3K ($)	3PS ($)	TOTAL ($)	3K ($)	3PS ($)	TOTAL ($)
Fuel	7,515.40	6,064.30	13,579.70	5,597.10	4,776.00	10,373.10
Oil	-	-	-	179.00	9.00	188.00
Provisions	1,098.00	1,082.00	2,180.00	602.00	296.00	898.00
Ice	100.00	-	100.00	40.00	-	40.00
Other Supplies	-	-	-	42.00	-	42.00
TOTAL	8,713.40	7,146.30	15,859.70	6,460.10	5,081.00	11,541.10

VESSEL PERFORMANCE

Two vessels caught over 200,000 lbs. of redfish during the experimental harvesting project.

In Division 3K, 30 sets were made by the **Sea Sons II** 27,930kg. (61,574 lbs.) of redfish and 984 kg. (2,170 lbs.) of other groundfish were caught.

The **Lady Day** made 16 sets and caught 7,868kg. (17,346 lbs.) of redfish and 30.4kg. (67 lbs.) of other groundfish. For a breakdown of fishing effort and catches in Division 3K, see Table 4.

TABLE 4. FISHING EFFORT AND CATCHES NAFO DIVISION 3K

	Sea Sons II		Lady Day	
Charter Days	19		19	
Days Fishing*	15		13	
Days Sets Made	12		9	
Number of Sets	30		16	
Catch	Quantity (lbs.)**	Value ($)	Quantity (lbs.)**	Value ($)
Redfish (Large)	5,618	702.25	17,346	2,168.25
(Small)	55,956	5,315.82	-	-
Sub-Total	61,574	6,018.07	17,346	2,168.25
Other Groundfish	2,170	389.53	67	9.88
TOTAL	63,744	$6,407.58	17,413	$2,178.13

* includes steaming to and from port as part of normal fishing activity.
**kgs. = lbs. x .4536

NOTE: Quantity does not include catches from trips 5 and 6 which were used for quality testing, however, this volume was minimal. (Table A 1-1).

In Division 3Ps, the **Sea Sons II** made 43 sets, catching 39,896 kgs. (87,953 lbs.) of redfish and 4,686 kgs. (10,334 lbs.) of other groundfish. The **Lady Day** made 32 sets catching 24,706 kgs. (54,467 lbs.) of redfish. A breakdown of fishing effort and catches in 3Ps is provided in Table 5.

TABLE 5. FISHING EFFORT AND CATCHES NAFO DIVISION 3Ps.

	Sea Sons II		Lady Day	
Charter Days	10		10	
Days Fishing*	10		9	
Days Sets Made	9		9	
Number of Sets	43		32	
Catch	Quantity (lbs.)**	Value ($)	Quantity (lbs.)**	Value ($)
Redfish	87,953	10,554.36	54,467	6,536.04
Other Groundfish	10,334	2,348.82	-	-
Total	98,287	12,903.18	54,467	6,536.04

*Includes steaming to and from port as part of normal fishing activity.
**kgs. = lbs. x .4536

In both fishing areas the larger and newer **Sea Sons II** substantially outperformed the **Lady Day** both in number of sets made (73 versus 48) and average catch per set (1007 kgs. versus 680 kgs.) (2,219 lbs. versus 1,498 lbs.). The **Sea Sons II** was better able to fish in rough weather and less prone to experience downtime due to gear and equipment failure. However the **Lady Day's** performance improved substantially in the relatively sheltered area of operation in Division 3Ps. For more information on set and catch details, refer to Appendix I.

QUALITY ANALYSIS

The most important technical aspect of the project was to determine whether the redfish landed by inshore otter trawlers could, under commercial fishing conditions, meet the quality standards of the Japanese market. The Japanese in addition to requiring redfish to be suitable in terms of texture, odour and bruising, also demanded that the fish retain its exterior colour. The reasons for this and its importance to the Japanese consumer is summarized in the following excerpt from a report prepared by the Japan Deep Sea Trawlers Association (Anon. 84).

> The Japanese people then have, since ancient times, felt a close affinity to fish as a central element of their diet. After first enjoying visually the color and placement on the dish of freshly caught fish -- fish with a high degree of freshness --, they relish the taste of fresh fish that has not been seasoned or processed. This is indeed the tradition of our people, as handed down by our forefathers from generation to generation. Thus, when selling fish and shellfish in Japan, one must appreciate that freshness and color tone exert a major influence on the price structure.
>
> The Japanese people have traditionally looked upon red-colored fish as decorative fish for joyous occasions. During the New Year celebration and at weddings and similar occasions, the center of the table is decorated with fresh "tai" (sea-bream) with heads, permitting even the ordinary family the joy of eating red-colored fish.
>
> Speaking specifically now of "redfish", since the body of this species is shorter than that of "tai" and its scales have a lesser degree of luster, unlike "tai", which is sold with heads, redfish is usually sold dressed. Larger-sized fish are sold mainly in small lots without further processing, while small-to-medium sized fish are generally processed by pickling in lees.
>
> However, regardless of the form in which the fish is sold, the Japanese market makes rigorous demands with regard to freshness and color, so that the <u>better the lovely red color is preserved, the higher the price the fish will command</u>.

The colour grades for redfish destined for this market are:

A (Grade 1) Excellent luster and colour, fully comparable to that at the time of catch.

B (Grade 2) Virtually no change in colour, but with a slight loss in luster.

C (Grade 3) A slight loss of colour on the belly side and a general loss of red colour throughout.

Fish showing large areas of white or with clear evidence of colour loss are considered substandard and often rejected.

The redfish caught during this project were stored round either in bulk pens below deck or in 90 lb. boxes; it was iced at a fish to ice ratio of approximately 3 to 1. Sales of redfish usually occurred after about 3-4 days fishing. The fish being offloaded at dockside in the boxes and with net bags and trnasported to processing plants in insulated containers (in the case of the 3Ps fishery this was approximately 250 km from the landing site). In all cases, fish inspected at the processing plant, usually by Japanese technicians, were judged 100% Grade A.

During the charter period efforts were made to try to determine the causes of redfish colour loss and to determine how these causes relate to the operational procedures of a commercial fishing enterprise. It was observed that exposure to sunlight has a bleaching effect on redfish with significant irreversible colour loss within 20 minutes. Rainfall caused bleaching and discolouration (occurrence of black spots), both occurring within 30 minutes of direct exposure.

Temperature increase was found to have a much lesser effect than exposure to sunshine or rainfall, at least over a short period of time. One sample of redfish was allowed to increase in temperature from 6°C at the time of catch to 20°C one hour and 35 minutes later. This sample was then iced with no noticeable loss in colour or firmness. Temperature increase has a greater effect over longer periods of time however. While redfish retained its colour for 18 hours when stored in pens at approximately 8°C (with a little ice), redfish stored in boxes with no ice began losing colour in only 12 hours but was still acceptable for the Japanese market. In another holding test conducted onboard fish was held for five days at 2°C to 4°C (ice added as needed). This resulted in initial colour loss beginning after three days and significant colour loss by day five.

FINANCIAL ASSESSMENT

Invariably two questions are asked regarding the introduction of new ideas in fish harvesting - will it work? and, will it make any money? The first question is relatively straightforward and has been addressed in the previous section. The second question is more difficult to answer. Although the chartered vessels attempted to operate as a commercial fishing venture, significant differences are recognized in areas such as fishing effort and exploration of new fishing grounds which make estimation of relevant costs and revenues very difficult. As well, the experience of two vessels during one month in 1985 may not accurately reflect how other

vessels might perform, what the results of similar activity might be at another time of year.

Notwithstanding these constraints, it is very important to give fishermen an indication, at least on an order of magnitude basis, of the likelihood of real returns from a commercial redfish harvesting venture. Accordingly, in the following Tables relevant costs and revenues from the experimental harvesting project, supplemented by available fleet cost and earnings data are presented in a format which shows operating profit per sea day and the number of fishing days needed to recover estimated annual fixed costs. Although these Tables represent the best information we have available, the results should not be used to make definitive statements regarding the viability of this fishery on a fleet basis. Rather, the interested fishermen should consider how the performance of the **Sea Sons II** and the **Lady Day** is similar to or different from what they might expect with their crew, vessel and gear. Significant differences in expected level of fishing effort, operating costs or annual fixed costs might improve or diminish prospects for any particular fishing enterprise.

The following assumptions have been made to relate the observed project performance of the **Sea Sons II** and the **Lady Day** to a commercial fishing venture:

a) Fishing effort is defined as those days when a minimum of 6 hours were spent at sea, either fishing or attempting to fish, or making unavoidable runs to or from port. Given this definition, sea days for both vessels are 15 days in Division 3K and 10 days in Division 3Ps for the **Sea Sons II**, and 13 days in 3K and 9 days in 3Ps for the **Lady Day.**

b) Fuel costs are those incurred by the vessels for those days which meet the definition given in (a).

c) Provision costs are $5.00 per crew member per fishing day (including the skipper).

d) Crew labour costs are calculated as 50 per cent of the gross revenue, a common share arrangement normally followed by these vessels; crew labour includes the skipper's share.

e) All other operating costs, repair and maintenance costs and fixed costs are fleet averages extrapolated from data collected in the 1983 cost and earnings survey of the Newfoundland west coast otter trawler fleet (Anon. 83). Although this estimate does not distinguish between the vessel sizes used in the charter, it is the best available.

Using the above listed adjustments, both the operating profit per day and the number of fishing days which would be needed to recover estimated annual fixed costs can be calculated. Tables 6 through 9 present the costs and revenues generated during the project for each vessel in each Division.

In Division 3K the **Sea Sons II** had an overall operating loss of $255.26 per fishing day, with only one trip generating an operating profit of $511.25, or $170.42 profit per fishing day for that trip. The financial performance of this particular trip (No. 2) signifies substantially higher catches per tow than other trips in Division 3K. During this trip the **Sea Sons II** harvested a large congregation of redfish which had attracted several fishing vessels. If the financial performance attained during this trip were representative of what could be expected of this vessel in Division 3K, it would take 216 days of fishing to recover fixed costs.

TABLE 6 - SEA SONS II DIVISION 3K.

	Summary	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6
Fishing Effort:							
Sea Days	15	2	3	2	2	3	3
# Tows	30	3	7	3	6	4	7
Landings:							
Redfish	62,224	166	39,722	5,452	16,234	600	50
Other Groundfish	2,420	1,094	424	122	530	60	190
Average Price:							
Redfish	$ 0.098	$ 0.125	$ 0.095	$ 0.125	$ 0.095	$ 0.098	$ 0.098
Other Groundfish	0.179	0.165	0.197	0.218	0.185	0.179	0.179
Revenue:							
Redfish	$ 6,081.77	$ 20.75	$ 3,773.59	$ 681.50	$ 1,542.23	$ 58.80	$ 4.90
Other Groundfish	433.43	180.51	83.53	26.60	98.05	10.74	34.01
Total Revenue	$ 6,515.20	$ 201.26	$ 3,857.12	$ 708.10	$ 1,640.28	$ 69.54	$ 38.91
Revenue Per Fishing Day	$ 434.35	$ 100.63	$ 1,285.71	$ 354.05	$ 820.14	$ 23.18	$ 12.97
Operating Costs:							
Fuel	$ 4,612.05	$ 614.94	$ 922.41	$ 614.94	$ 614.94	$ 922.41	$ 922.41
Provisions	375.00	50.00	75.00	50.00	50.00	75.00	75.00
Other supplies	350.77	46.77	70.15	46.77	46.77	70.15	70.15
Vessel/Gear Maintenance	1,748.74	233.16	349.75	233.16	233.16	349.75	349.75
Crew Labour (inc. skipper)	3,257.60	100.63	1,928.56	354.05	820.14	34.77	19.46
Total Operating Costs	$10,344.16	$ 1,045.50	$ 3,345.87	$ 1,298.92	$ 1,765.01	$ 1,452.08	$ 1,436.77
Operating Costs Per Fishing Day	$ 689.61	$ 522.75	$ 1,115.29	$ 649.46	$ 882.51	$ 484.03	$ 478.92
Total Operating Profit (Loss)	$(3,828.95)	$ (844.24)	$ 511.25	$ (590.83)	$ (124.73)	$(1,382.54)	$(1,397.86)
Operating Profit Per Fishing Day	(255.26)	(422.12)	170.42	(295.41)	(62.37)	(460.85)	(465.95)
Annual Fixed Cost	$36,723.00	$36,723.00	$36,723.00	$36,723.00	$36,723.00	$36,723.00	$36,723.00
Days to Recover Fixed Costs	NA	NA	216	NA	NA	NA	NA

TABLE 7 - LADY DAY DIVISION 3K.

	Summary	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	Trip 6
Fishing Effort:							
Sea Days	13	2	3	2	2	2	2
# Tows	16	2	5	2	4	2	1
Landings:							
Redfish	17,466	0	17,008	338	0	120	0
Other Groundfish	67	43	14	10	0	0	0
Average Price:							
Redfish	$ 0.125	$ 0.125	$ 0.125	$ 0.125	$ 0.125	$ 0.125	$ 0.125
Other Groundfish	0.148	0.148	0.148	0.148	0.148	0.148	0.148
Revenue:							
Redfish	$ 2,183.25	$ 0.00	$ 2,126.00	$ 42.25	$ 0.00	$ 15.00	$ 0.00
Other Groundfish	9.88	6.34	2.07	1.48	0.00	0.00	0.00
Total Revenue	$ 2,193.13	$ 6.34	$ 2,128.07	$ 43.73	$ 0.00	$ 15.00	$ 0.00
Revenue Per Fishing Day	$ 168.70	$ 3.17	$ 709.36	$ 21.86	$ 0.00	$ 7.50	$ 0.00
Operating Costs:							
Fuel	$ 3,212.37	$ 494.21	$ 741.32	$ 494.21	$ 494.21	$ 494.21	$ 494.21
Provisions	260.00	40.00	60.00	40.00	40.00	40.00	40.00
Other supplies	304.00	46.77	70.15	46.77	46.77	46.77	46.77
Vessel/Gear Maintenance	1,515.57	233.16	349.75	233.16	233.16	233.16	233.16
Crew Labour (inc. skipper)	1,096.57	3.17	1,064.03	21.86	0.00	7.50	0.00
Total Operating Costs	$ 6,388.50	$ 817.32	$ 2,285.25	$ 836.01	$ 814.14	$ 821.64	$ 814.14
Operating Costs Per Fishing Day	$ 491.42	$ 408.66	$ 761.75	$ 418.00	$ 407.07	$ 410.82	$ 407.07
Total Operating Profit (Loss)	$(4,195.37)	$ (810.97)	$ (157.18)	$ (792.28)	$ (814.14)	$ (806.64)	$ (814.14)
Operating Profit Per Fishing Day	(322.72)	(405.49)	(52.39)	(396.14)	(407.07)	(403.32)	(407.07)
Annual Fixed Cost	$36,723.00	$36,723.00	$36,723.00	$36,723.00	$36,723.00	$36,723.00	$36,723.00
Days to Recover Fixed Costs	NA	NA	NA	NA	NA	NA	NA

TABLE 8 - SEA SONS II DIVISION 3Ps.

	Summary	Trip 1	Trip 2	Trip 3	Trip 4
Fishing Effort:					
Sea Days	10	3	2	4	1
# Tows	47	14	15	14	4
Landings:					
Redfish	87,953	28,969	26,595	25,265	7,124
Other Groundfish	10,333	895	6,021	3,417	0
Average Price:					
Redfish	$ 0.120	$ 0.120	$ 0.120	$ 0.120	$ 0.120
Other Groundfish	0.227	0.227	0.227	0.227	0.227
Revenue:					
Redfish	$10,554.36	$ 3,476.28	$ 3,191.40	$ 3,031.80	$ 854.88
Other Groundfish	2,345.59	203.17	1,366.77	775.66	0.00
Total Revenue	$12,899.95	$ 3,679.45	$ 4,558.17	$ 3,807.46	$ 854.88
Revenue Per Fishing Day	$ 1,290.00	$ 1,226.48	$ 2,279.08	$ 951.86	$ 854.88
Operating Costs:					
Fuel	$ 4,698.30	$ 1,409.49	$ 939.66	$ 1,879.32	$ 469.83
Provisions	250.00	75.00	50.00	100.00	25.00
Other supplies	233.85	70.15	46.77	93.54	23.38
Vessel/Gear Maintenance	1,165.82	349.75	233.16	466.33	116.58
Crew Labour (inc. skipper)	6,449.98	1,839.72	2,279.08	1,903.73	427.44
Total Operating Costs	$12,797.95	$ 3,744.11	$ 3,548.68	$ 4,442.92	$ 1,062.24
Operating Costs Per Fishing Day	$ 1,279.79	$ 1,248.04	$ 1,774.34	$ 1,110.73	$ 1,062.24
Total Operating Profit (Loss)	$ 102.01	$ (64.67)	$ 1,009.49	$ (635.46)	$ (207.36)
Operating Profit Per Fishing Day	10.20	(21.56)	504.74	(158.86)	(207.36)
Annual Fixed Cost	$36,723.00	$36,723.00	$ 36,723.00	$36,723.00	$36,723.00
Days to Recover Fixed Costs	NA	NA	73	NA	NA

TABLE 9 - LADY DAY DIVISION 3Ps.

	Summary	Trip 1	Trip 2	Trip 3
Fishing Effort:				
Sea Days	9	3	3	3
# Tows	32	11	15	6
Landings:				
Redfish	54,467	18,507	33,480	2,480
Other Groundfish	0	0	0	0
Average Price:				
Redfish	$ 0.120	$ 0.120	$ 0.120	$ 0.120
Other Groundfish	0.227	0.227	0.227	0.227
Revenue:				
Redfish	$ 6,536.04	$ 2,220.84	$ 4,017.60	$ 297.60
Other Groundfish	0.00	0.00	0.00	0.00
Total Revenue	$ 6,536.04	$ 2,220.84	$ 4,017.60	$ 297.60
Revenue Per Fishing Day	$ 726.23	$ 740.28	$ 1,339.20	$ 99.20
Operating Costs:				
Fuel	$ 3,903.00	$ 1,301.00	$ 1,301.00	$ 1,301.00
Provisions	180.00	60.00	60.00	60.00
Other supplies	210.46	70.15	70.15	70.15
Vessel/Gear Maintenance	1,049.24	349.75	349.75	349.75
Crew Labour (inc. skipper)	3,268.02	1,110.42	2,008.80	148.80
Total Operating Costs	$ 8,610.72	$ 2,891.32	$ 3,789.70	$ 1,929.70
Operating Costs Per Fishing Day	$ 956.75	$ 963.77	$ 1,263.23	$ 643.23
Total Operating Profit (Loss)	$(2,074.68)	$ (670.48)	$ 227.90	$(1,632.10)
Operating Profit Per Fishing Day	(230.52)	(223.49)	75.97	(544.03)
Annual Fixed Cost	$36,723.00	$36,723.00	$36,723.00	$36,723.00
Days to Recover Fixed Costs	NA	NA	NA	NA

The **Lady Day**, a smaller less adequately equipped vessel, exhibited even less satisfactory financial performance in Division 3K, with an overall operating loss of $322.72 per fishing day. No trip provided an operating profit, with the best financial performance occurring during trip No. 2 which generated an operating loss of $52.39 per fishing day.

In Division 3Ps the **Sea Sons II** realized an overall operating profit of $102.01 for its 10 days of fishing, or just over $10 per fishing day. At this profit level the **Sea Sons II** would never recover its annual fixed costs which are estimated to be $36,723.00. The best financial performance obtained was during trip No. 2 when the vessel was able to make 15 tows in 2 days. During this particular 2-day trip, the vessel made an operating profit of $504.74 per fishing day. If this trip were representative of what could be expected of this vessel in Division 3Ps, it would take 73 fishing days to recover fixed costs.

In 3Ps, the **Lady Day** was not as financially successful as the **Sea Sons II**. During its 9 days of fishing activity, the **Lady Day** generated an operating loss of $230.52 per fishing day, with one trip providing an operating profit of $75.97 per fishing day. Even at this latter profit level, the **Lady Day** could not recover its annual fixed costs in 1 year of fishing operation.

The above reported results are dependent upon the assumptions made and are reflective of activities undertaken during the project. Neither the assumptions nor the activities for the time period of the charter are written in stone as being the circumstances which would be faced by another vessel at another time.

Shortly after the charter had expired, a price of 16¢ per pound was offered to fishermen for redfish (Division 3Ps area only, as these fish were larger than the Division 3K fish). Also, while analysing the financial performance of the vessels, it was noted that crew shares were rather high in real dollar terms, even though the 50-50 share arrangement is not unusual for the fishing industry. Furthermore, to help adjust for a lesser amount of searching that could be expected as experience is gained and to remove the effect of a contractural renumeration for fuel expenditures, a further 10% fuel reduction is felt to be in order. This analysis indicates that, even under this scenario, the redfish fishery on the Northeast Coast would not be viable, largely due to low catch rates. Operation on the South Coast is, however, substantially improved resulting in an overall operating profit of $479.36 per fishing day for the **Sea Sons II**. At this average operating profit level, the **Sea Sons II** would need 77 days to recover fixed costs. Under this scenario the the **Sea Sons II** would have made an operating profit during all four trips, including one 2-day trip with a daily operating profit of $1,239.33.

Improving the operating environment under this second scenario is not enough to make the redfish fishery profitable for the **Lady Day**. Though the overall performance of this vessel on the South Coast results in an operating profit of $79.13 per fishing day, this profit level would not be sufficient to recover fixed costs.

CONCLUSIONS

The Redfish Harvesting Project was quite successful in showing that otter trawl technology can be utilized to catch and land redfish acceptable to the Japanese market. Even with an elapsed time of 3-4 days and inexpensive round storage, quality standards were met consistently. Box and pen storage appear to be equally effective with both methods yielding high quality when used in conjunction with proper handling and icing procedures.

The financial viability is suspect especially for the Northeast Coast, where catch rates were low, fishing activity was further offshore and weather conditions were poor as compared to the South Coast. Despite lower costs experienced on the **Lady Day**, this vessel was less viable than the larger, better equipped **Sea Sons II** which outperformed it in volume of catch per tow and number of tows in both 3K and 3Ps Divisions.

Given catch rates as experienced during the project, a 50% crew share and a 12¢ per pound price, neither vessel could make a profit in either Division.

Reducing crew share to 35%, as is the case on some vessels, reducing fuel cost to reflect a lower amount of effort required in searching activity, and applying a 16¢ per pound selling price for redfish (South Coast only) makes the enterprise more attractive. Under this scenario the **Sea Sons II** would have made an operating profit of $4,793.61 over a 10 day period in Division 3Ps with a daily operating profit of $479.36,

the **Sea Sons II** could cover its annual fixed costs in approximately 77 fishing days. This more favourable scenario is not so advantageous to the **Lady Day,** as this vessel would have averaged a $79.13 operating profit per fishing day which is not enough to cover full costs for the year.

ACKNOWLEDGEMENTS

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APPENDIX I

DAILY FISHING ACTIVITY LOG

WITH SET LOCATION MAPS

TABLE A1-1. M.V. SEA SONS II - DIVISION 3K

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
1	July 11	1	49-28-20 52-54-60	49-31-17 52-56-47	65	181	30	1160			
		2	49-44-14 52-08-42	49-45-75 52-05-03	40	170	100	60			Strong Tides
2	July 12	3	49-17-73 53-06-36	49-18-90 53-06-99	10	90	0	0			No Catch
									166	1094	Sale of catch at Valleyfield
3	July 13	4	49-30-51 51-59-40	49-34-57 51-57-74	60	161	90	130			Net Damaged Extensively
4	July 14	5	50-32-32 51-25-26	50-34-92 51-22-25	55	142	7000	45			Good fishing
		6	50-35-28 51-22-41	50-31-49 51-21-64	55	155	11,000	45			Good fishing
		7	50-31-21 51-20-25	50-34-43 51-24-54	78	147	10,000	45			Good fishing
		8	50-34-54 51-24-59	50-30-15 51-20-60	70	148	8,000	45			Good fishing
		9	50-30-06 51-19-85	50-28-88 51-26-58	80	146	1,000				Good fishing
		10	50-31-14 51-24-05	50-33-53 51-22-41	80	142	4,000	75			Good fishing
5	July 15								39,722	424	Rough seas, Sale of catch at Valleyfield

TABLE A1-1. M.V. SEA SONS II - DIVISION 3K CONT'D

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
6	July 16										Steam to Seldom, Fogo Island
7	July 17	11	50-28-35 52-31-97	50-26-20 52-27-62	70	135	0	0			No Catch
		12	50-09-61 52-13-00	50-08-00 52-09-00	35	168	4200	100			
8	July 18	13	50-09-24 52-12-50	50-10-99 52-03-07	90	155	1000		5452	122	Sale of Catch at Valleyfield
	July 19										
	July 20										
	July 21										
9	July 22	14	50-09-31 52-15-10	50-10-45 52-10-84	40	168	1600	100			
		15	50-11-02 52-09-62	N/A N/A	60	151	600	50			
		16	N/A	N/A	85	144	2000	100			
		17	N/A Same area ex-periment out.	N/A	20	165	3000	60			
		18	N/A	N/A	45	156	4000	70			
		19	N/A	N/A	90	146	3500	50			
10	July 23								16,234	452	Sale of fish at Valleyfield

TABLE A1-1. M.V. SEA SONS II - DIVISION 3K CONT'D

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
11	July 24	20	50-08-63 52-13-70	50-10-04 52-09-72	30	151	500	30			Departed Valleyfield
12	July 25	21	50-10-80 52-08-52	50-08-18 52-12-80	74	146	0	0			Damaged cod-end
		22	50-08-59 52-10-94	50-09-87 52-07-83	33	156	100	30			Hooked Net
		23	49-48-02 53-04-45	49-48-96 53-02-38	33	150	0	0			No Catch
13	July 26										Arrived Valleyfield (no sale)
14	July 27										Steam to St. Anthony
15	July 28	24	51-00-16 55-23-38	50-57-51 55-23-05	45	87					Capelin
		25	51-05-85 55-18-55	51-04-50 55-20-24	20	100					Capelin
	July 29										Wind - St. Anthony
16	July 30	26	51-27-31 54-26-04	51-28-24 54-20-63	60	129	0	70			No Redfish
		27	51-28-97 54-20-00	51-31-82 54-19-16	60	157	0	100			No Redfish

TABLE A1-1. M.V. SEA SONS II - DIVISION 3K CONT'D.

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
		28	51-32-40 54-07-91	51-35-59 54-07-47	75	186	0	20			No Redfish
17	July 31	29	51-28-24 53-30-82	51-31-20 53-25-11	90	185	0	0			No catch
		30	51-30-90 53-24-20	51-28-96 53-22-92	55	175	50	0			Poor fishing
18	Aug. 01										Steamed to LaScie
	Aug. 02										Steamed to Twillingate
19	Aug. 03										Steamed to 3PS
20	Aug. 04										Steamed to 3PS

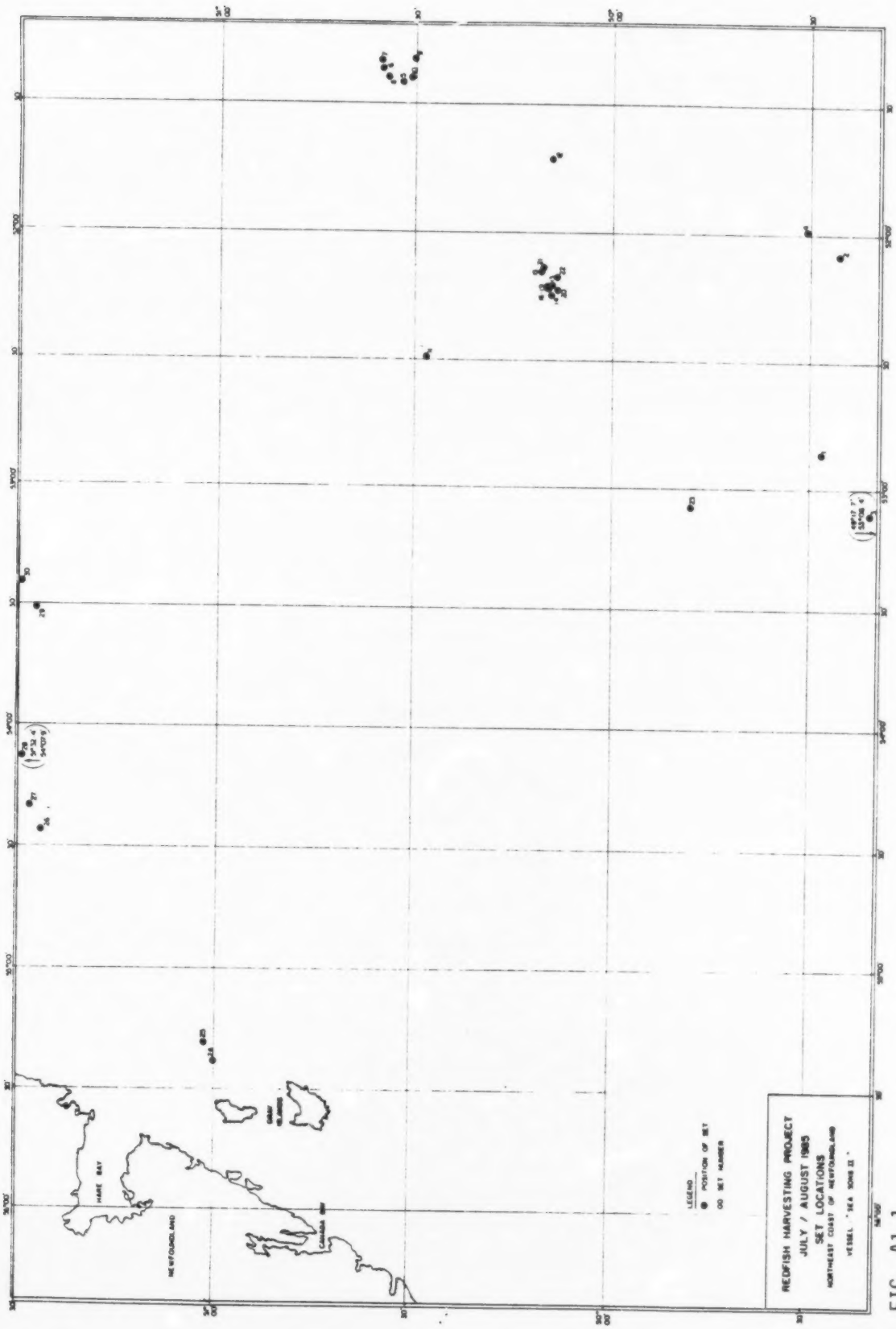

REDFISH HARVESTING PROJECT
JULY / AUGUST 1985
SET LOCATIONS
NORTHEAST COAST OF NEWFOUNDLAND
VESSEL - "M.A. SONS II"
LEGEND
POSITION OF SET
SET NUMBER
HARE BAY
NEWFOUNDLAND
CANADA

FIG. A1-1

TABLE A1-2. M.V. SEA SONS II - DIVISION 3PS

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
21	Aug. 07	1	47-18-34 56-25-09	47-21-97 56-23-88	85	165	2,000				Departed Fortune Good Fishing
		2	47-21-92 56-24-06	47-17-75 56-25-48	100	160	3,000	200			Good Fishing
		3	47-17-77 56-25-20	47-23-27 56-24-70	100	160	2,500	100			Good Fishing
		4	47-23-12 56-24-21	47-20-55 56-20-51	65	160	2,500				Good Fishing
		5	47-21-14 56-19-58	47-23-66 56-18-52	50	154	2,000				Good Fishing
		6	47-23-39 56-18-60	47-22-17 56-17-22	45	144	1,500				Good Fishing
		7	47-22-47 56-19-44	47-25-02 56-17-35	65	150	2,500				Tangle in Cod end
22	Aug. 08	8	47-24-07 56-17-75	47-21-32 56-19-75	70	145	2,000	100			Small Redfish
		9	47-21-42 56-19-60	47-24-06 56-18-45	80	142	1,500	150			
		10	N/A	N/A	140	155	500				Net Tore, Small Redfish
		11	N/A	N/A	120	182	1,000				
		12	N/A	N/A	70	180	2,000				Large Redfish
23	Aug. 09	13	47-31-51 55-19-58	47-33-53 55-19-72	45	102	4,000				Small Redfish
		14	47-31-88 55-19-80	47-33-74 55-19-81	30	99	3,500		30,500*	550*	Sale of Catch at Bay L'Argent

TABLE A1-2. M.V. SEA SONS II - DIVISION 3PS CONT'D

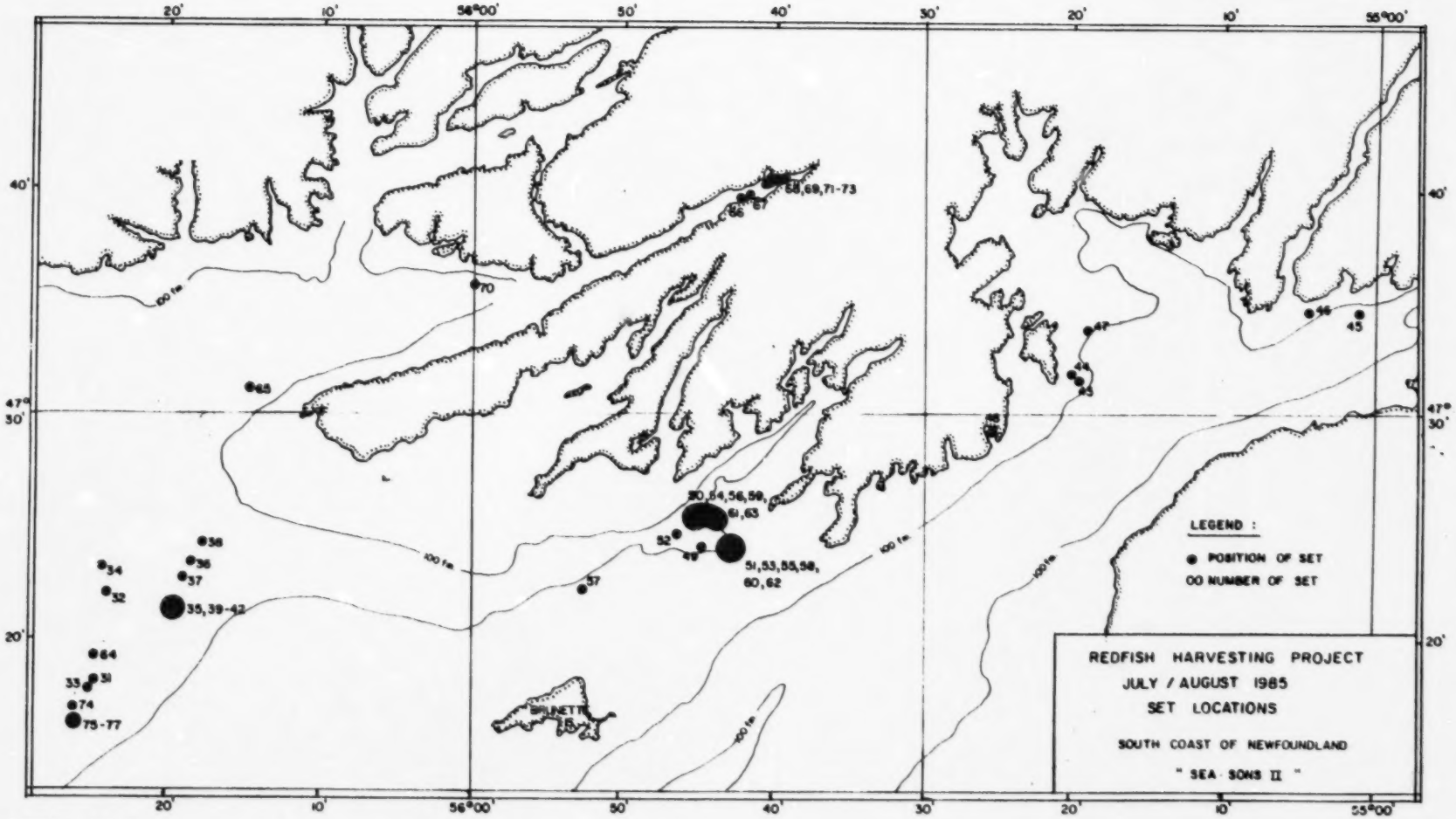
Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/ ong	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
24	Aug. 10	15	47-34-46 55-00-04	47-34-31 55-01-36	20	128	0				Rocks
		16	47-34-49 55-01-52	47-34-37 55-04-61	35	117	500				
		17	47-33-57 55-18-71	47-33-59 55-19-21	10	43	0				Net Damages
		18	47-29-18 55-22-08	47-26-94 55-26-12	75	164	0				
		19	47-23-89 55-42-83	47-25-23 55-45-02	40	112	3,500				Large Redfish
		20	47-25-11 55-44-31	47-24-13 55-42-47	35	105	2,500				Very Large Redfish
		21	47-24-32 55-43-42	N/A N/A	-	114	0				Hydraulic line burst
25	Aug. 11	22	47-24-65 55-46-54	47-24-10 55-42-64	40	127	1,000				
		23	47-24-01 55-42-56	47-25-26 55-45-30	25	125	5,000	400			Large Redfish
		24	47-25-19 55-45-17	47-23-65 55-42-62	50	126	4,500	700			Large Redfish
		25	7-23-68 55-42-98	47-25-77 55-45-32	50	111	2,500	800			Net Hook up
		26	47-25-71 55-45-28	N/A N/A	20	118	2,000	700			Small Redfish
		27	47-22-11 55-52-77	47-21-53 55-55-21	25	131	1,000	100			Very Small Redfish

TABLE A1-2. M.V. SEA SONS II - DIVISION 3PS CONT'D.

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
	Aug.11	28	47-23-81 55-43-18	47-28-26 55-45-37	48	115	2,000	500			
		29	47-25-38 55-44-63	N/A N/A	25	101	3,500	500	28,000*	3,700*	Sale of Catch at Bay L'Argent
26	Aug. 12	30	47-24-18 55-43-34	47-25-51 55-43-77	30	109	1,500	200			
		31	47-25-06 55-43-71	47-23-42 55-43-03	30	96	2,000	500			
		32	47-23-42 55-42-81	47-25-44 55-45-04	45	113	4,000	600			
		33	47-25-45 55-44-92	47-23-80 55-42-59	40	115	3,000	800			
27	Aug. 13	34	47-19-00 56-24-87	47-24-41 56-24-20	105	164	1,000				Tide and Wind
		35	47-31-08 56-14-81	47-32-61 56-12-18	35	136	1,000				Hermitage Bay Large Redfish
		36	47-39-65 55-42-65	47-38-91 55-41-47	5	120	700				Net Hook up
		37	47-39-74 55-41-94	47-40-37 55-40-42	12	92	1,500				Small Redfish
		38	47-40-44 55-40-34	47-39-77 55-41-83	15	95	5,000				
		39	47-40-30 55-40-64	47-39-62 55-41-40	15	94	500				

TABLE A1-2. M.V. SEA SONS II - DIVISION 3PS CONT'D

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
28	Aug. 14	40	47-35-70 56-00-92	47-35-48 55-58-29	45	160	200				
		41	47-50-74 55-56-42	47-50-51 55-58-93	20	120	2,500				
		42	47-52-80 56-02-43	47-47-69 55-52-35	20	95	2,500				
		43	47-47-67 55-52-30	N/A N/A	5	95	1,200				Net Hook up
29	Aug. 15								26,600*	2,100*	Sale of Catch at Bay L'Argent
30	Aug. 16	44	47-16-79 56-26-19	47-18-55 56-22-61	55	138	0				
		45	N/A N/A	N/A N/A	65	160	3,500				
		46	N/A N/A	N/A N/A	75	150	3,000				
		47	N/A	N/A	70	165	1,000		7,500*		Sale of Catch at Bay L'Argent
									87,953 *estimated	10,334	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BRUNETTE
LEGEND :
POSITION OF SET
00 NUMBER OF SET
REDFISH HARVESTING PROJECT
JULY / AUGUST 1985
SET LOCATIONS
SOUTH COAST OF NEWFOUNDLAND
" SEA SONS II "

FIG. A1-2

TABLE A1-3. M.V. LADY DAY - DIVISION 3K

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
1	July 11	1	49-31-02 52-54-08	49-32-38 52-55-53	30	180		80			Tangled Gear
		2	49-44-54 52-13-49	49-46-10 52-11-00	40	174	10	10			Hooked Gear
2	July 12										Steamed to Valleyfield
3	July 13										Exploration
4	July 14	3	50-32-43 51-22-09	50-33-39 51-20-28	40	145	2,000	30			Small Redfish
		4	50-34-42 51-20-75	50-31-92 51-24-91	65	146	4,500				
		5	50-32-12 51-24-01	50-34-81 51-20-55	70	142	5,500				
		6	50-33-30 51-23-61	50-29-69 51-26-9	80	144	5,000				
		7	50-32-24 51-22-54	50-33-08 51-20-61	50	145	800				
5	July 15										Sale of Catch at Valleyfield
6	July 16										Steam to Seldom
7	July 17	8	50-28-25 52-32-28	50-27-36 52-30-35	40	130	20	20			
8	July 18	9	50-07-65 52-11-60	50-07-16 52-09-10	45	150	400				Steam to Valleyfield
9	July 20										Steam to Twillingate

TABLE A1-3. M.V. LADY DAY - DIVISION 3K CONT'D

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
10	July 21	10	50-18-57 53-47-20	50-18-00 53-45-66	40	180	0				Ice in Area
		11	50-31-51 53-50-48	50-32-67 53-48-76	50	164	0				Strong Tide
11	July 22	12	50-25-18 54-02-52	50-26-37 54-04-76	55	141	0				No Catch
		13	50-22-04 54-02-52	- -	-	146	0				Gear damaged
	July 23										
12	July 24	14	50-09-42 52-10-95	50-07-32 52-09-09	55	148	100				
13	July 25	15	50-10-11 52-08-47	50-08-64 52-10-55	50	150	20				Engine Trouble
14	July 26										Steam to Seldom
15	July 27										Steam to St. Anthony
16	July 28	16	50-57-96 55-23-77	50-58-07 55-24-89	12	84	0				No catch
17	July 31										Rough Seas
18	Aug. 02										Twillingate
19	Aug. 03										Steam to South Coast
20	Aug. 04										Steam to South Coast

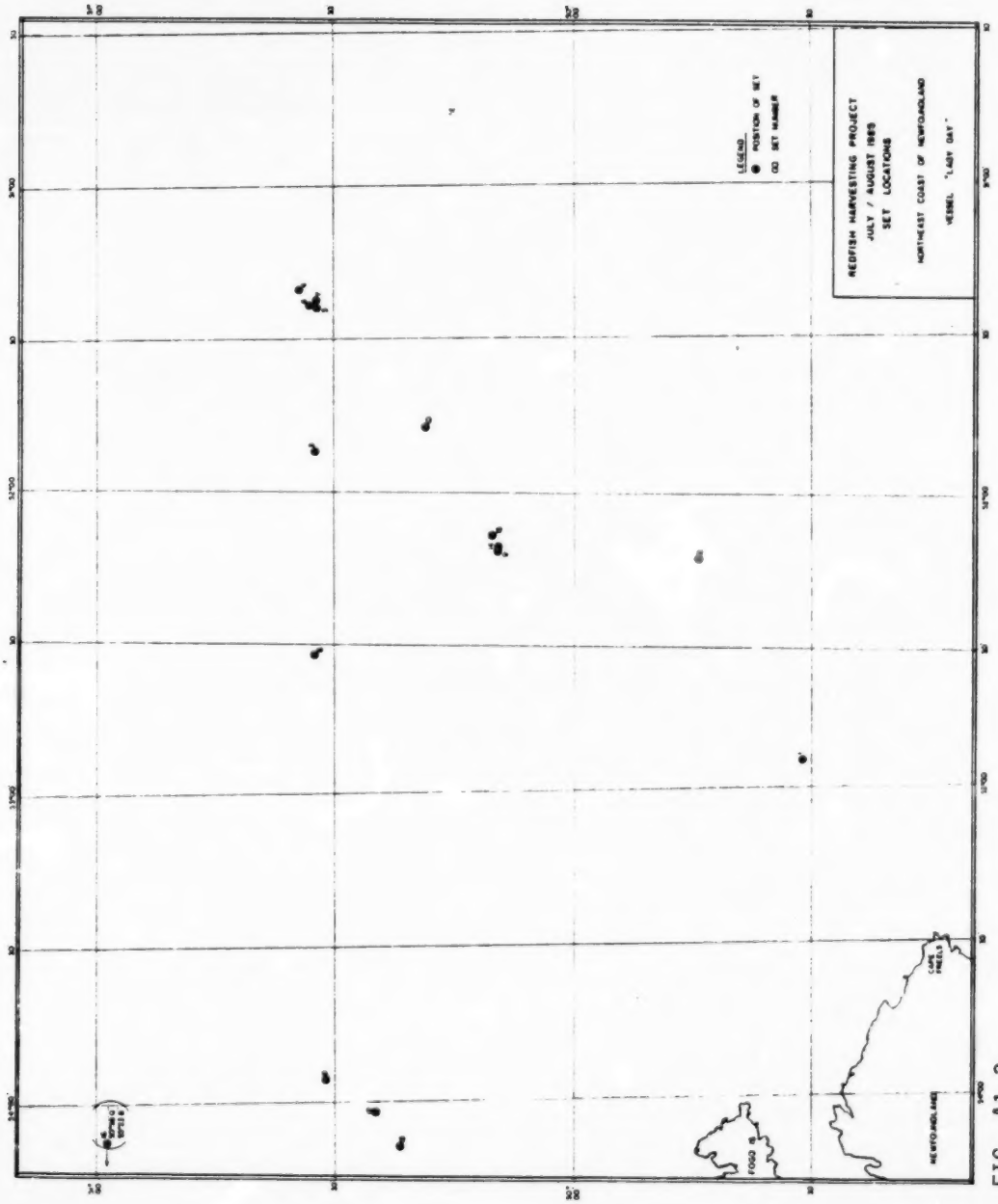
REDFISH HARVESTING PROJECT
JULY / AUGUST 1989
SET LOCATIONS
NORTHEAST COAST OF NEWFOUNDLAND
VESSEL "LADY DAY"
LEGEND
POSITION OF SET
SET NUMBER
FOGO ISLAND
NEWFOUNDLAND

FIG. A1-3

TABLE A1-4. M.V. LADY DAY - DIVISION 3PS

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
21	Aug. 07	1	47-20-87 56-28-00	47-16-67 56-21-86	60	145	80	350			Large Redfish
		2	47-19-78 56-21-25	47-24-03 56-20-95	83	165	400				
		3	47-22-94 56-18-96	47-18-86 56-17-65	33	170	600				
		4	47-20-89 56-26-95	47-11-16 56-40-00	90	165	3,000				
		5	47-22-16 56-18-08	47-20-88 56-16-11	40	165	1,000				
22	Aug. 08	6	47-24-14 56-17-55	47-30-25 55-49-20	81	160	4,000				Large Redfish
		7	N/A N/A	N/A N/A	90	160	1,500	200			
		8	N/A N/A	N/A N/A	135	160	6,000				
		9	N/A N/A	N/A N/A	125	160	1,800				
23	Aug. 09	10	47-31-96 55-17-64	47-32-40 55-18-04	25	110	5,000				Fixed gear in area
		11	47-31-74 55-17-76	47-34-14 55-17-25	45	110	6,000				Steam to Bay L'Argent
24	Aug. 10	12	47-33-50 55-18-48	47-34-15 55-17-36	30	105	2,500				Small Fish
		13	47-31-54 55-18-74	47-35-04 55-16-59	45	120	4,000				

TABLE A1-4. M.V. LADY DAY - DIVISION 3PS CONT'D

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
		14	47-31-94 55-17-64	47-34-50 55-17-10	50	120	500				
		15	47-26-43 55-40-09	47-26-39 55-42-65	29	85	2,000	50			
		16	47-27-92 55-42-52	47-27-44 55-40-47	15	85	4,000	50			Larger Fish
25	Aug. 11	17	47-27-64 55-44-90	47-24-71 55-40-41	65	105	2,000	100			Good fishing
		18	47-24-82 55-39-52	47-27-16 55-43-71	50	115	5,500	100			
		19	47-25-85 55-44-01	47-24-26 55-40-82	45	120	1,500	20			
		20	47-24-50 55-40-68	47-27-46 55-45-02	55	120	4,000				
		21	47-24-98 55-40-29	47-26-74 55-42-62	35	120	12,000	180			
		22	47-24-81 55-39-66	47-27-02 55-43-19	50	120	9,500				
		23	47-24-93 55-39-71	47-26-64 55-42-52	38	115	1,500				
26	Aug. 12	24	47-24-87 55-39-58	47-26-47 55-42-47	36	120	1,500				
		25	47-24-58 55-40-02	47-27-73 55-42-80	48	115	5,000				
		26	42-24-86 55-41-52	47-26-22 55-44-60	45	120	1,000		38,000		Sale of Catch at Bay L'Argent

TABLE A1-4. M.V. LADY DAY - DIVISION 3PS CONT'D

Charter Day	Date	Tow No.	Start Position Lat/Long	End Position Lat/Long	Duration (min)	Average Depth	Estimated Catch (Round)		Landings		Comments
							Redfish	Other Groundfish	Redfish (rd)	Other Groundfish	
27	Aug. 13	27	47-32-66 55-04-20	47-32-47 55-07-07	55	140	30				Gear Damaged
		28	47-32-12 55-17-55	47-33-69 55-18-72	35	115	600				Storm Warning
28	Aug. 14	29	N/A off Harbour Breton	N/A	30	120	300				Wind and Rough Seas
		30	N/A "	N/A	30	120	100				
		31	N/A Clapple Island	N/A	40	115	500				
29	Aug. 15	32	47-26-40 55-41-08	47-27-50 55-40-48	30	85	0				Gear Damaged
30	Aug. 16										Steam to St. Josephs

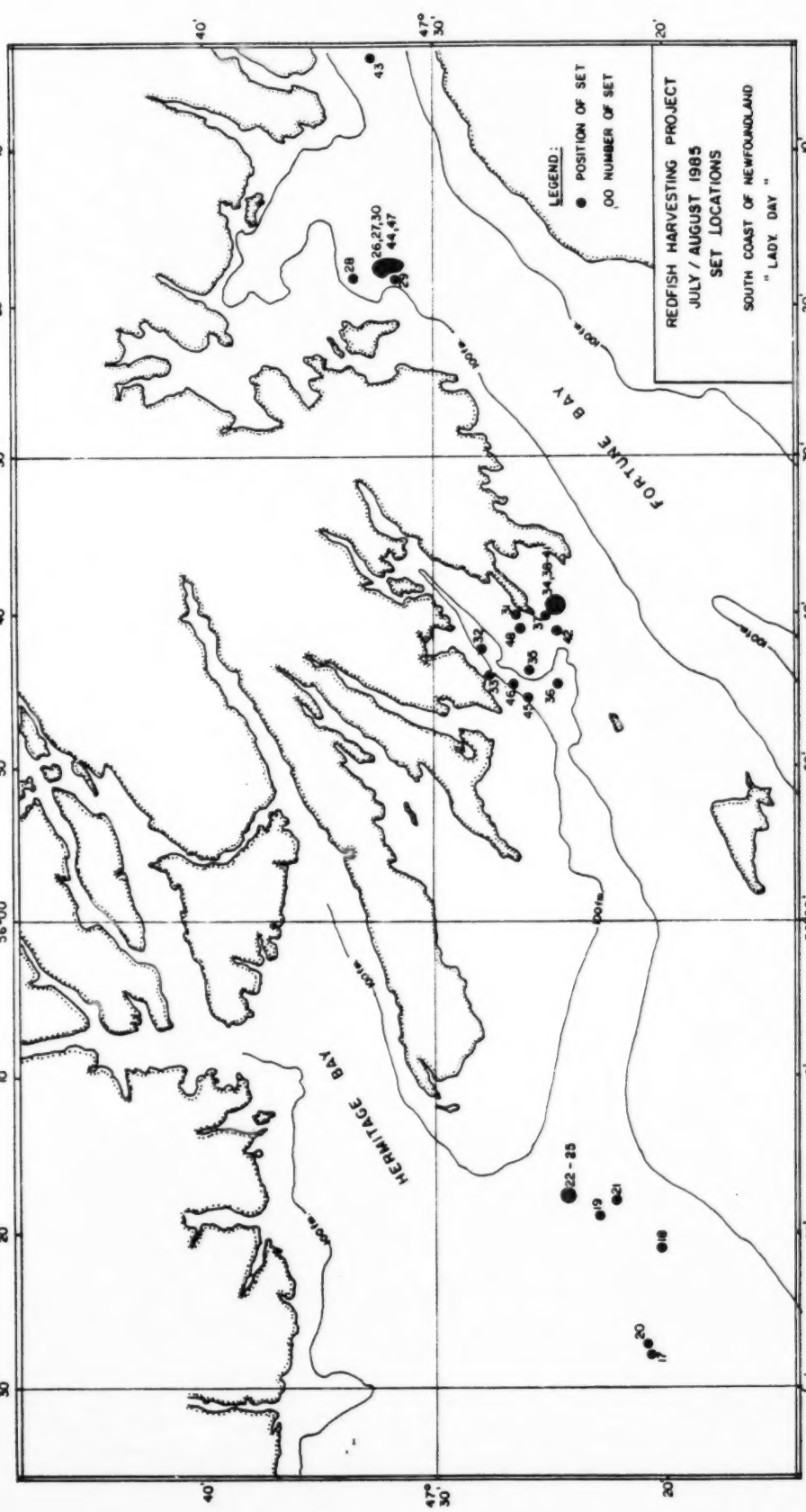
REDFISH HARVESTING PROJECT
JULY / AUGUST 1985
SET LOCATIONS
SOUTH COAST OF NEWFOUNDLAND
" LADY DAY "
LEGEND:
POSITION OF SET
00 NUMBER OF SET
FORTUNE BAY
HERMITAGE BAY
100m
200m
47° 30'
56°00'
22 - 25
26,27,30
44,47
34,38

FIG. A1-4